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Tanaka

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(54) **TAPE CARTRIDGE**

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(30) **Foreign Application Priority Data**

Oct. 31, 2013 (JP) 2013-226612

(51) **Int. Cl.**

B41J 2/15	(2006.01)
B41J 32/00	(2006.01)
B41J 15/04	(2006.01)
B41J 3/407	(2006.01)

(52) **U.S. Cl.**

CPC ***B41J 32/00*** (2013.01); ***B41J 3/4075*** (2013.01); ***B41J 15/042*** (2013.01); ***B41J 15/044*** (2013.01)

(58) **Field of Classification Search**

CPC B41J 11/007; B41J 11/42; B41J 3/4075; B41J 3/4078

See application file for complete search history.

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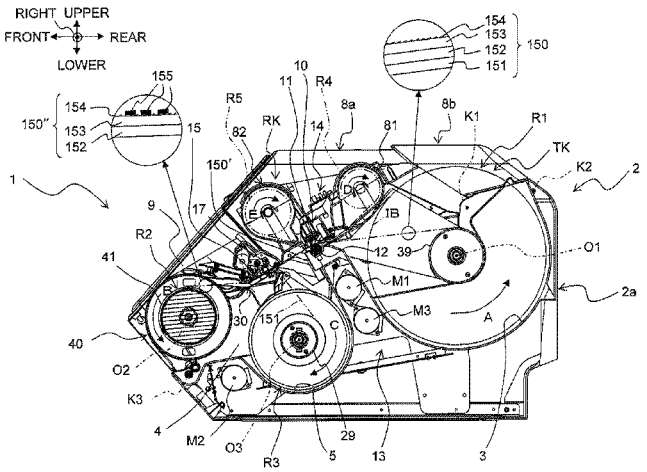
(57) **ABSTRACT**

The disclosure discloses a tape cartridge including a connecting arm, a guide attaching/detaching part, and a second guide member. The connecting arm rotatably supports a first winding core and a second winding core. The guide attaching/detaching part is configured to detachably attach a first guide member. The first guide member is configured to allow a tape fed out from a first tape roll to pass and to guide the tape by regulating movement in a tape width direction through contact with both end portions of the tape in the tape width direction. The second guide member is disposed on the connecting arm. The second guide member is configured to guide the tape passes while being guided by the first guide member, by regulating movement in a second direction through contact with one side part of the tape in the second direction.

14 Claims, 10 Drawing Sheets



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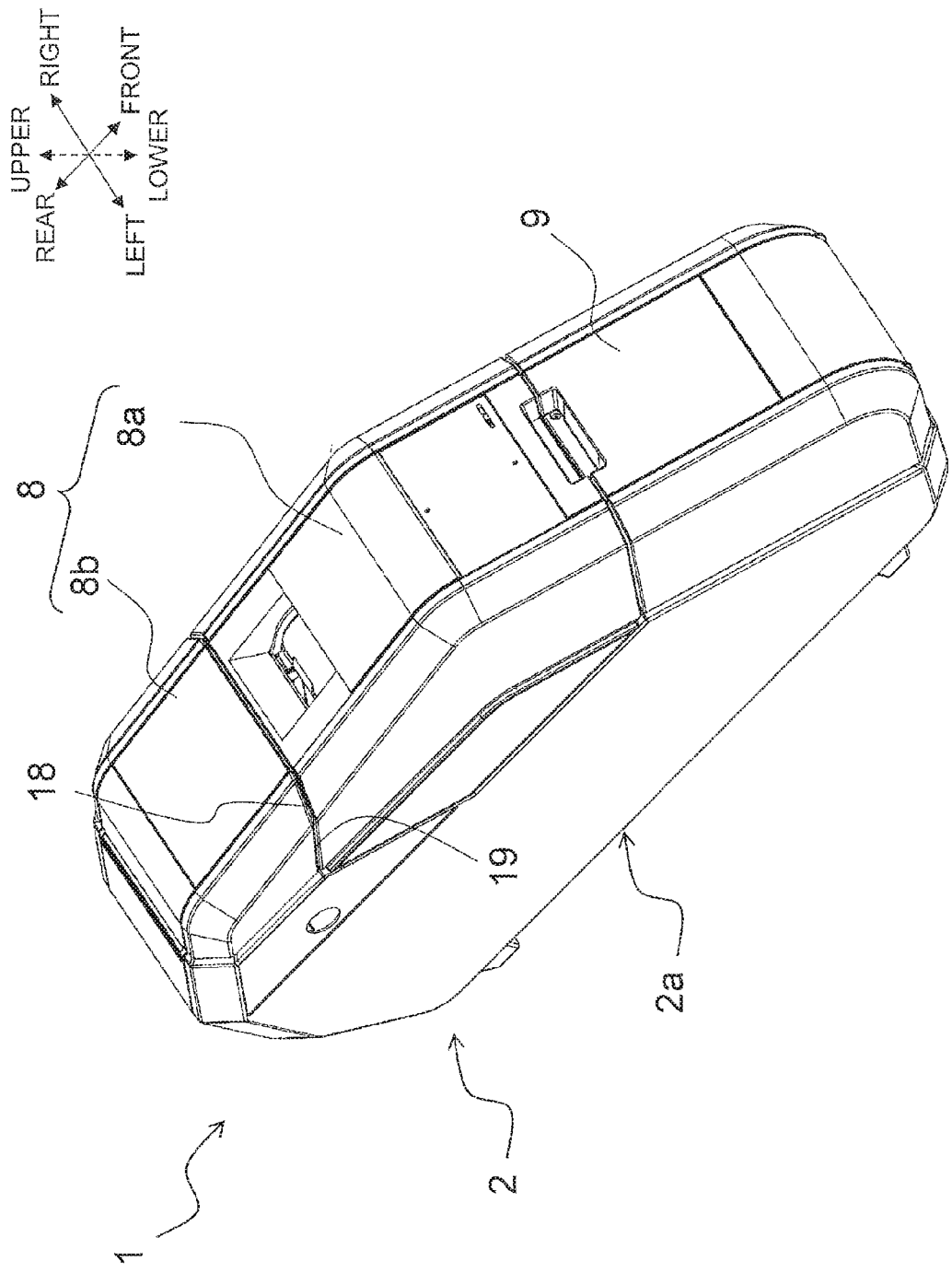


FIG. 1

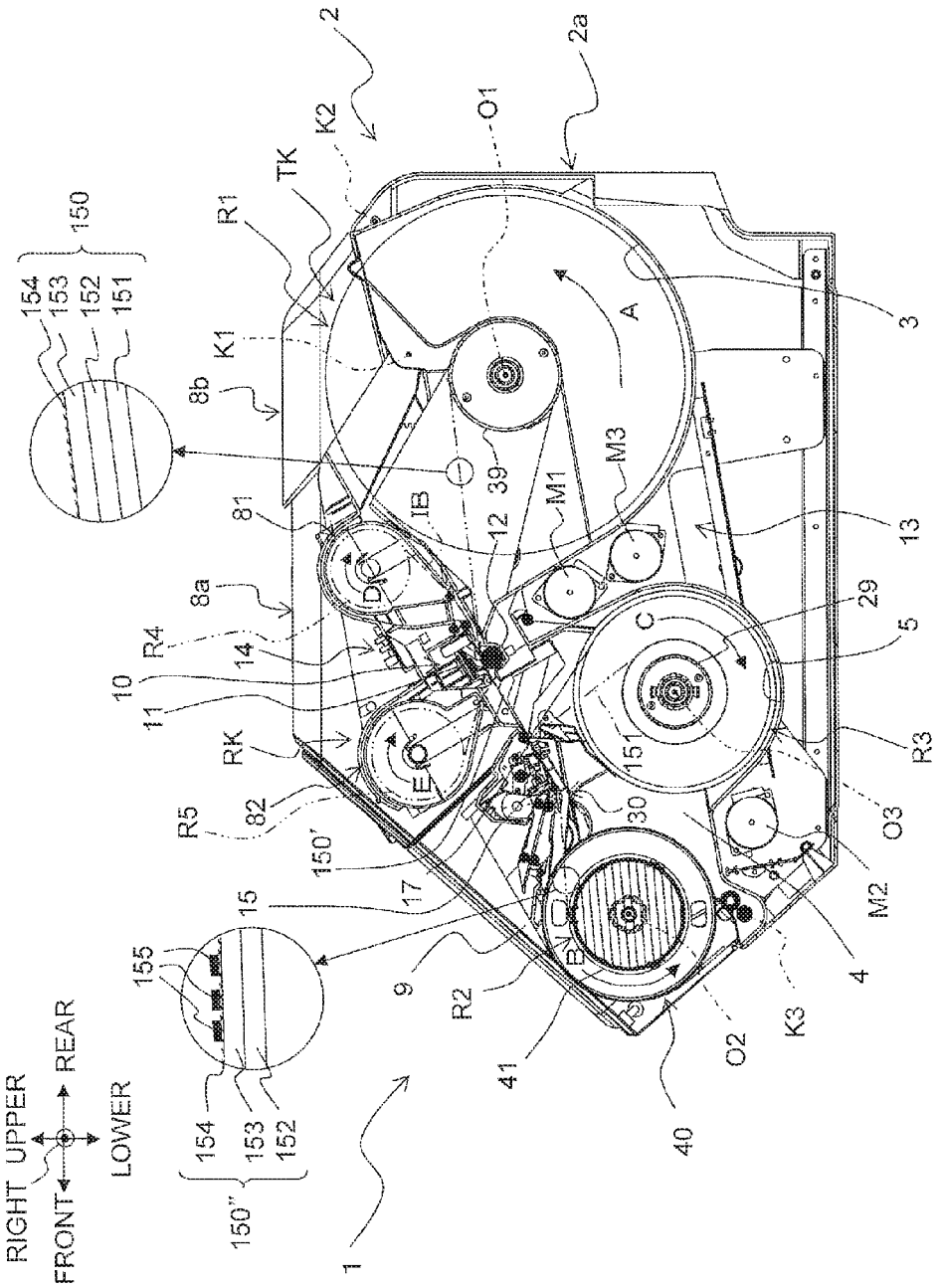
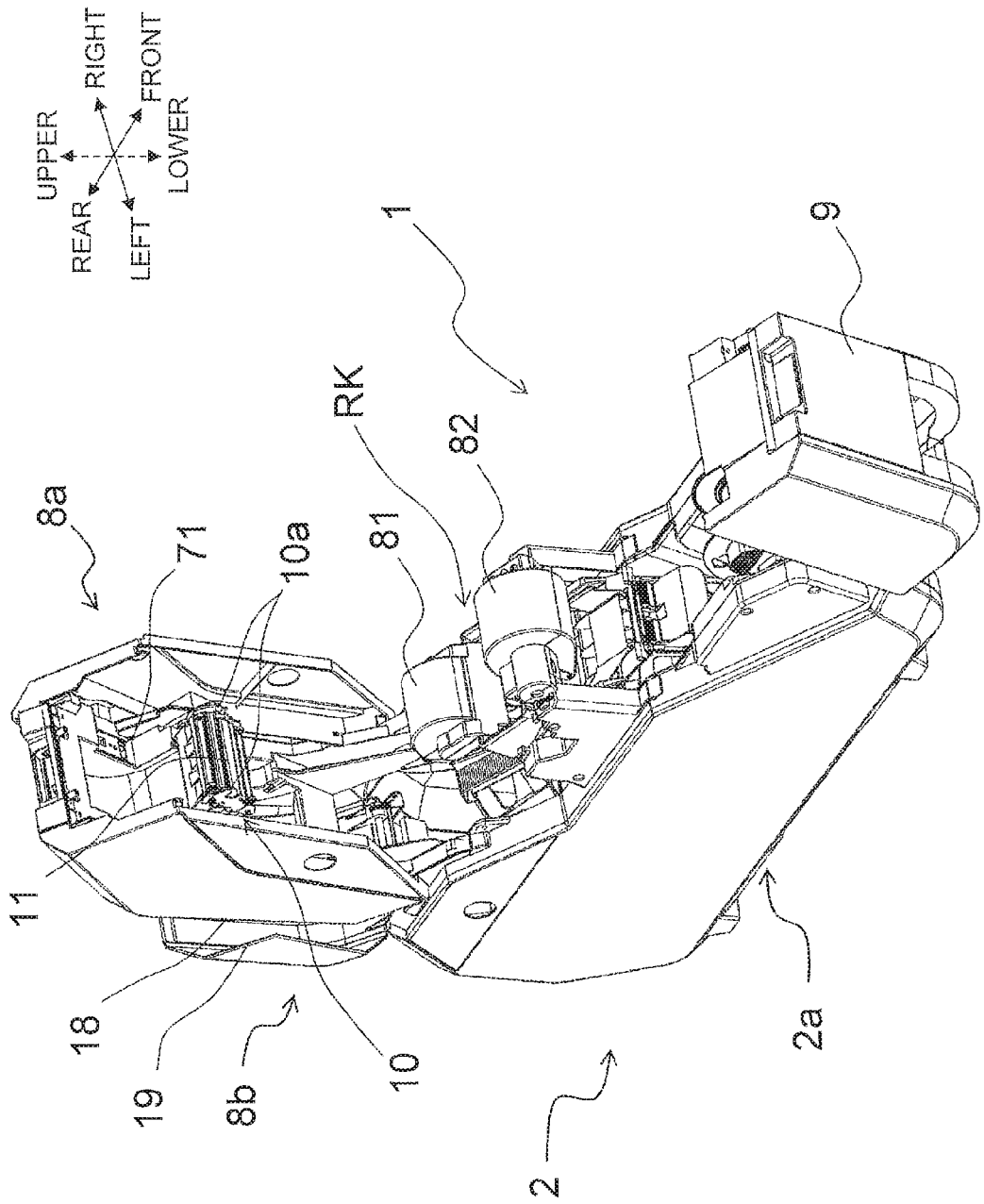

RIGHT
UPPER
REAR
FRONT
LOWER
150
154
153
152
151
150''
155
15
17
150'
82
RK
R5
10
11
14
R4
8a
81
8b
K1
R1
TK
K2
2
2a
O1
3
A
39
M3
M1
12
IB
1
13
29
5
C
151
R3
O3
M2
4
K3
O2
40
41
R2
9
30
B
1

FIG. 2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RIGHT
FRONT
REAR
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LOWER
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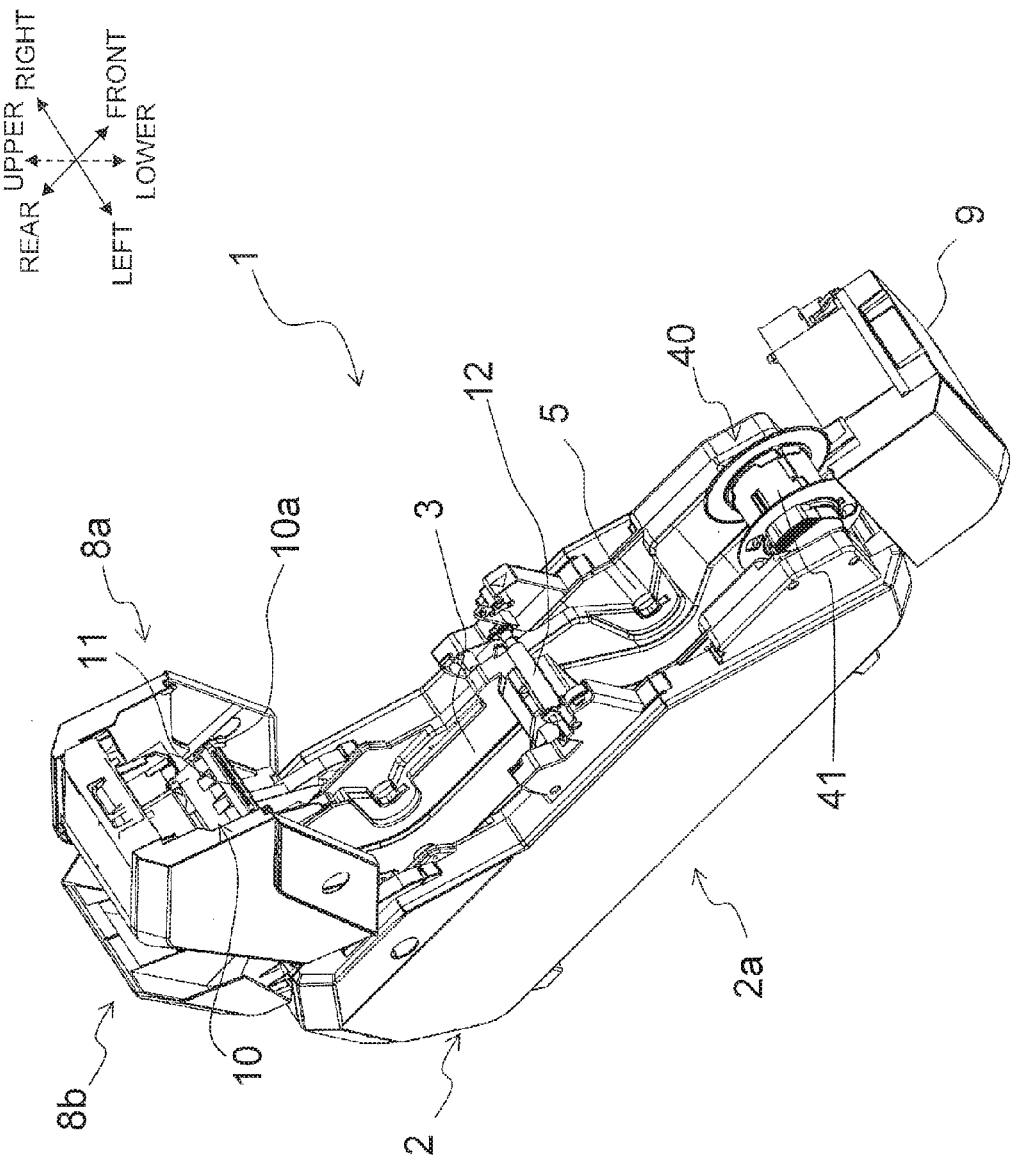
9
RK
82
8a
71
10a
81
11
18
19
8b
10
2
2a

FIG. 3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LOWER
REAR
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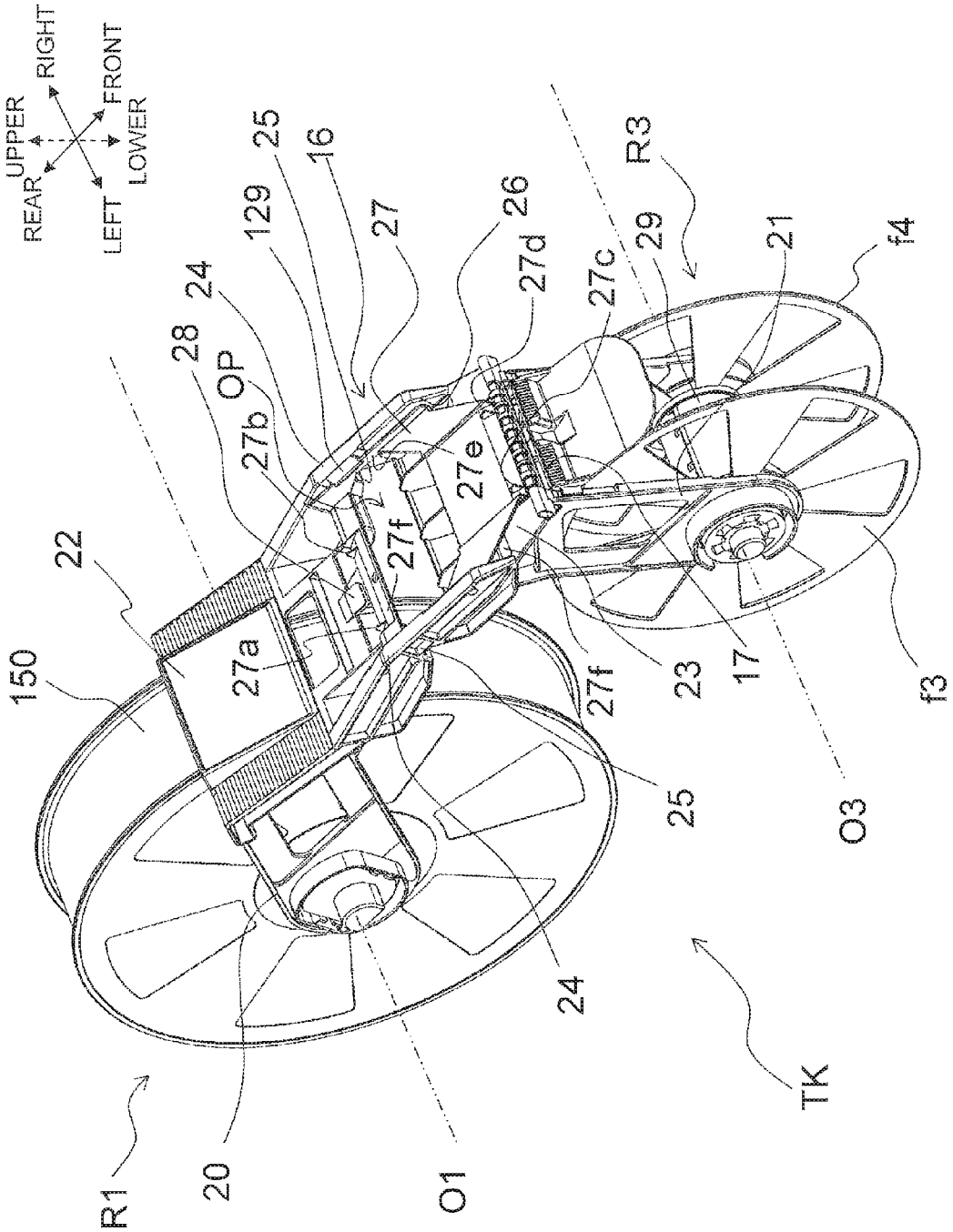
40
12
5
3
10a
8a
11
41
2a
10
8b
2

FIG. 4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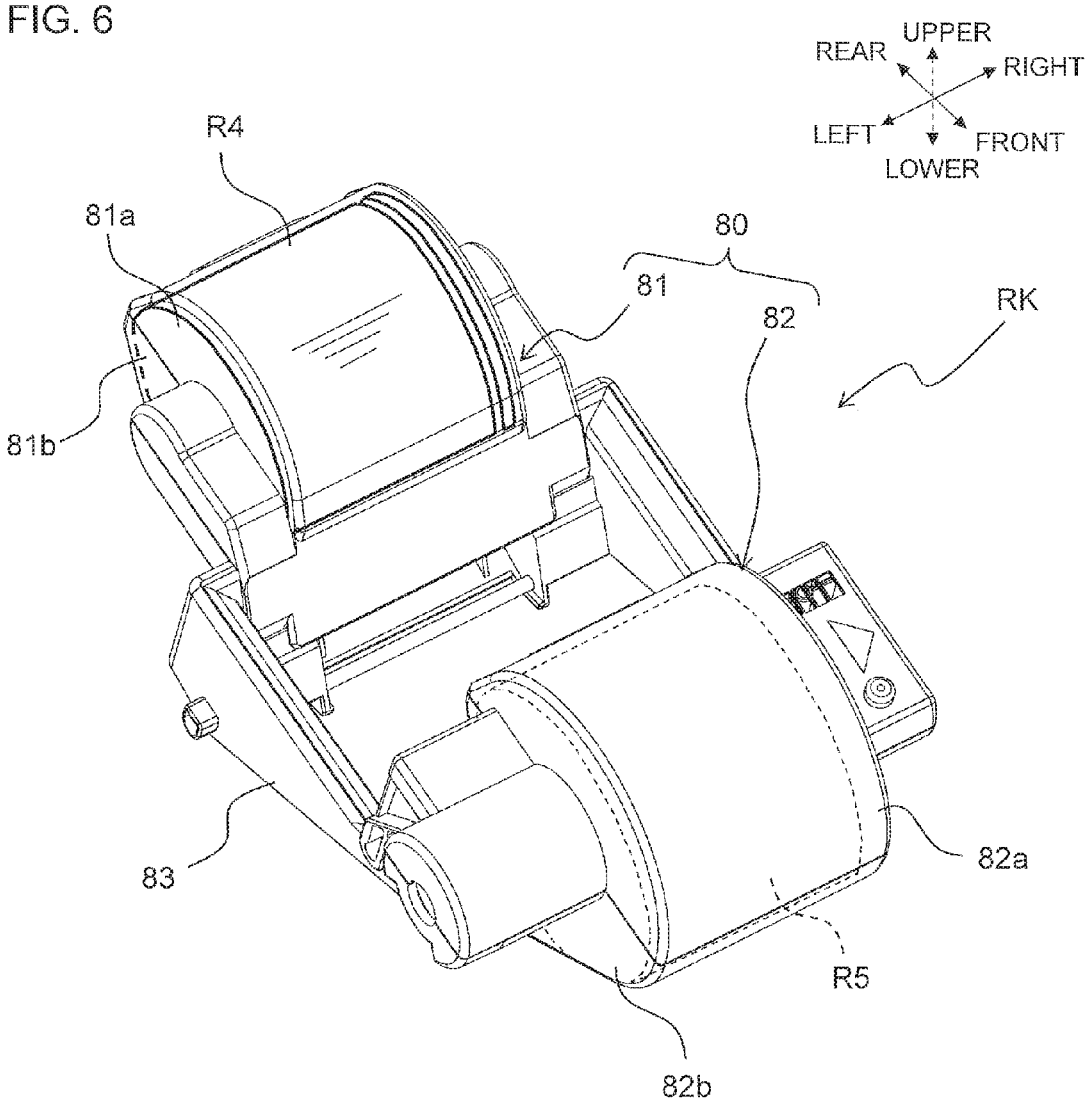
REAR
RIGHT
FRONT
LOWER
LEFT
R1
20
O1
TK
24
25
O3
150
22
27a
27b
28
OP
24
129
25
16
27
26
27d
27c
29
R3
21
f4
f3
17
23
27f
27e
27f

FIG. 5

FIG. 6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LEFT
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LOWER
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81a
80
81
82
RK
81b
83
82a
R5
82b

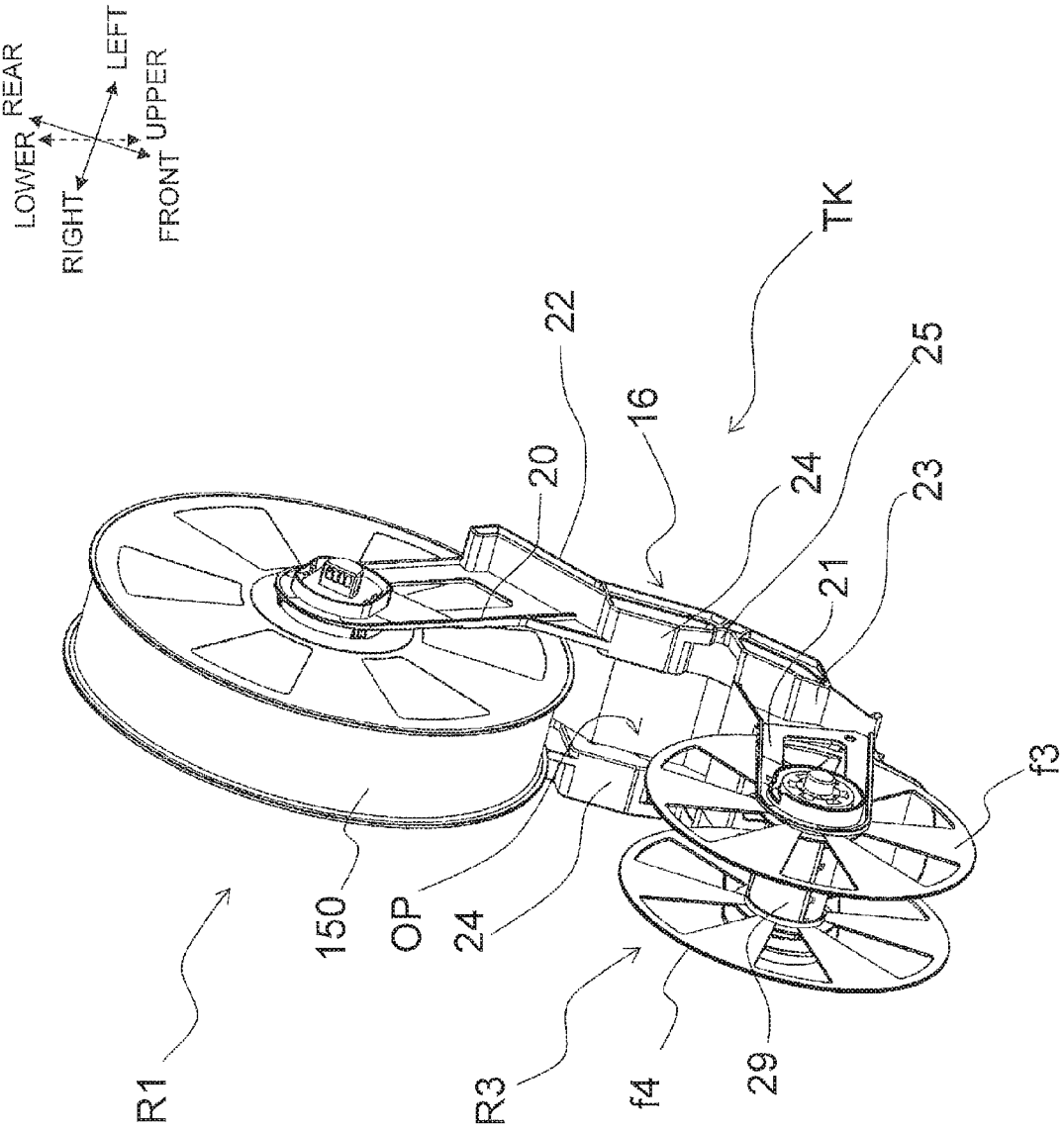
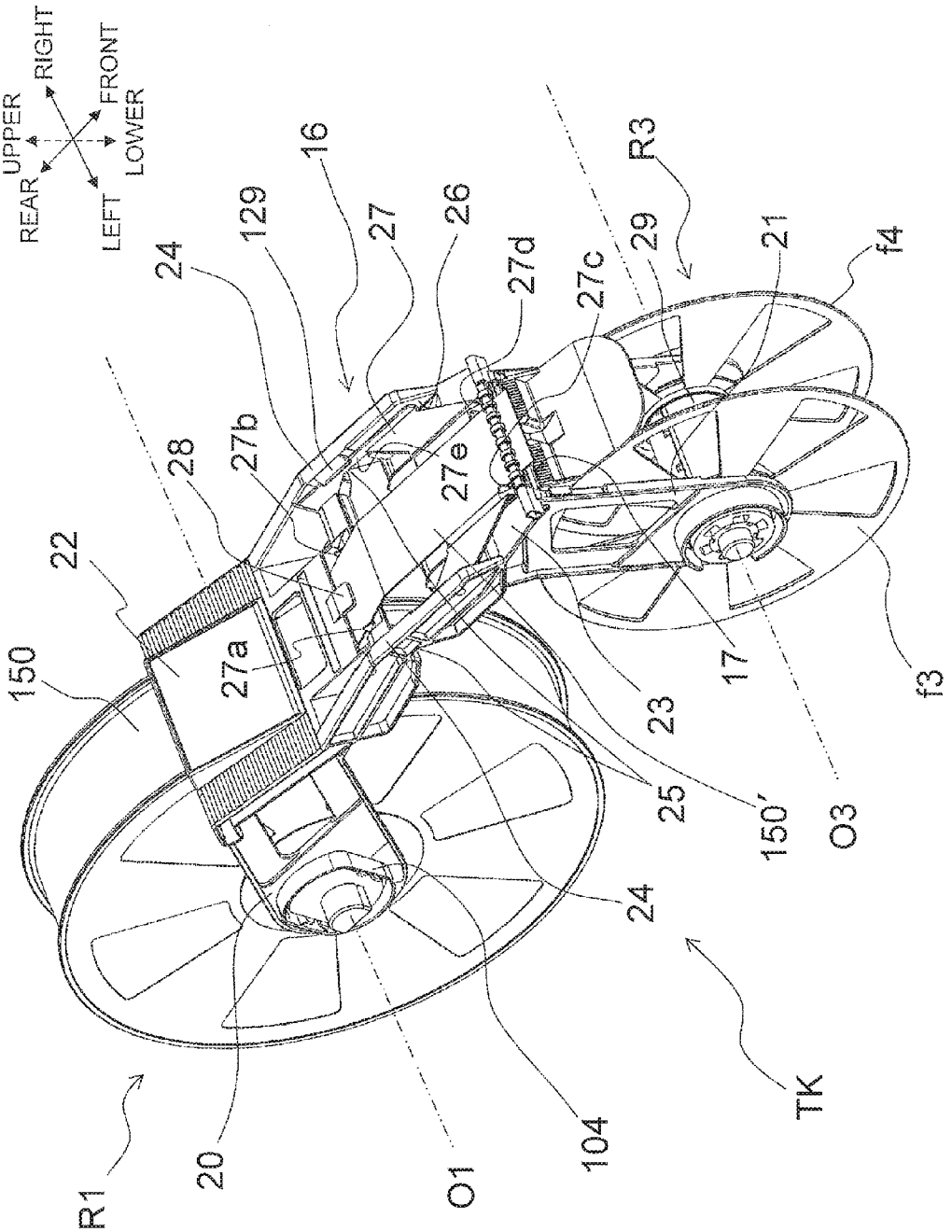

LOWER
REAR
LEFT
RIGHT
FRONT
UPPER
TK
22
25
16
20
24
23
21
f3
150
OP
24
R1
R3
f4
29

FIG. 7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RIGHT
REAR
FRONT
LEFT
LOWER
24
129
16
27
26
27d
27c
29
R3
21
f4
28
27b
27e
22
150
27a
23
17
f3
25
150'
O3
24
TK
R1
20
O1
104

FIG. 8

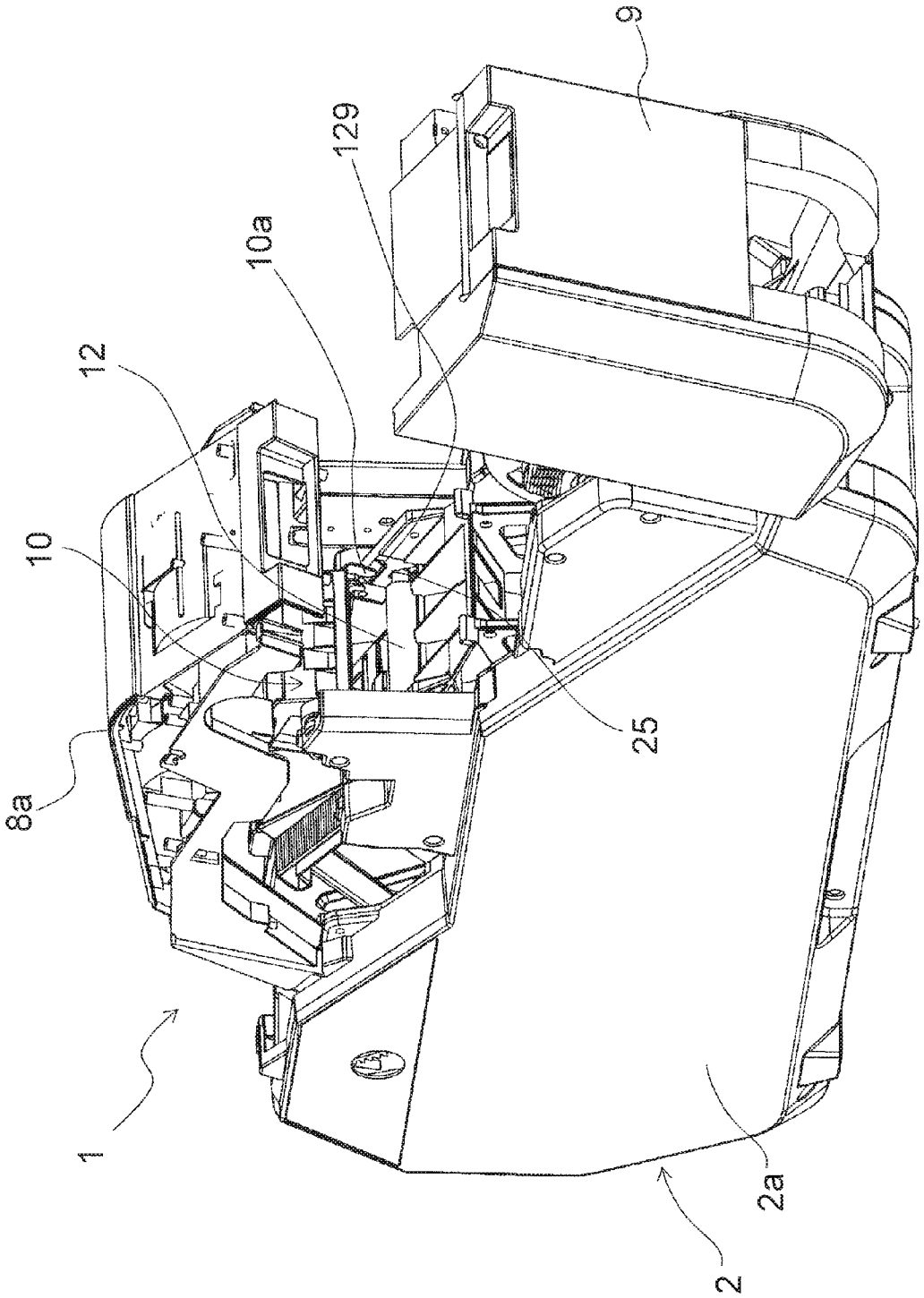

FIG. 9

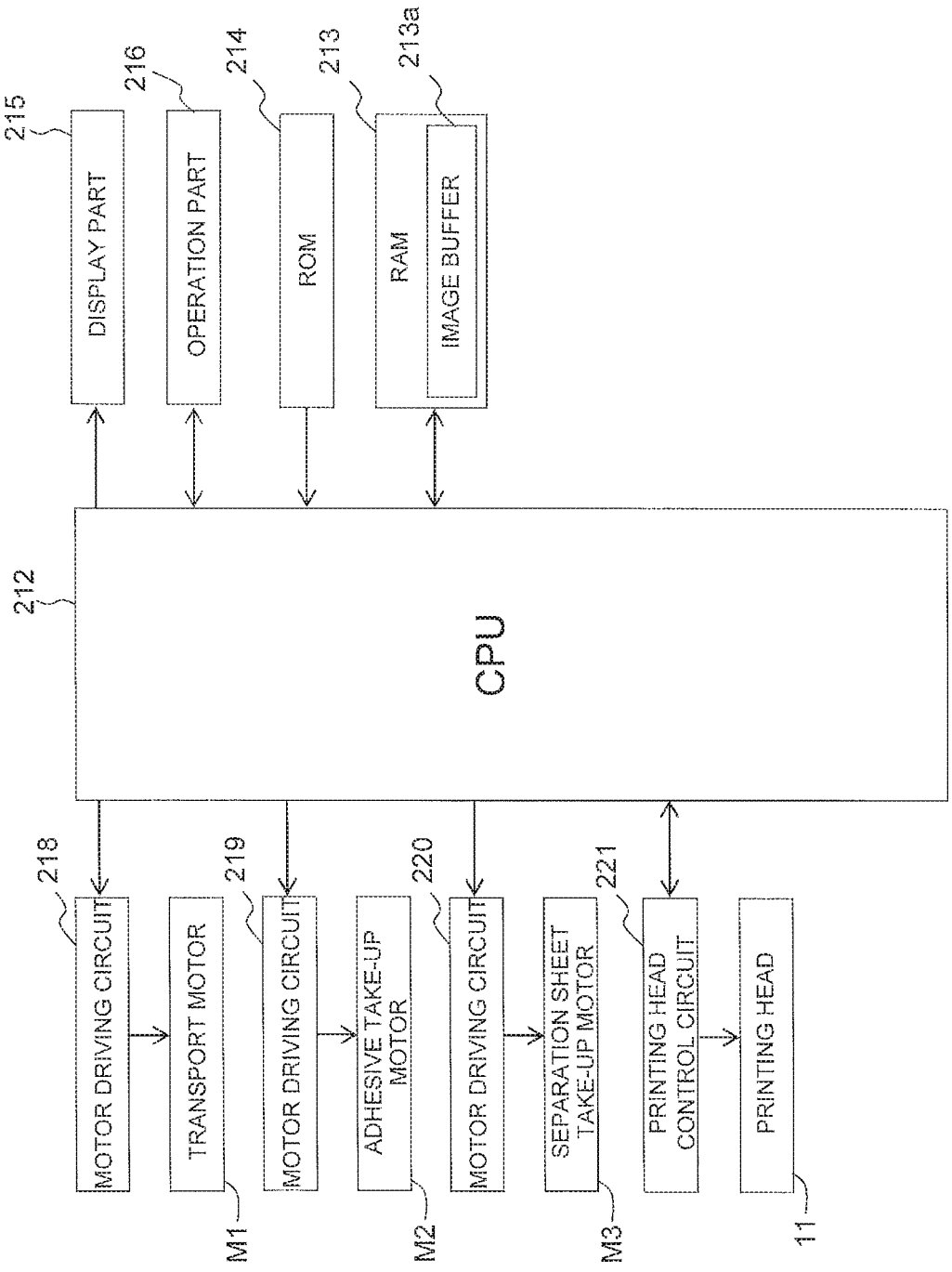
215
DISPLAY PART
216
OPERATION PART
214
ROM
213
RAM
213a
IMAGE BUFFER
212
CPU
218
MOTOR DRIVING CIRCUIT
219
TRANSPORT MOTOR
M1
MOTOR DRIVING CIRCUIT
220
ADHESIVE TAKE-UP MOTOR
M2
MOTOR DRIVING CIRCUIT
221
SEPARATION SHEET TAKE-UP MOTOR
M3
PRINTING HEAD CONTROL CIRCUIT
PRINTING HEAD
11

FIG. 10

TAPE CARTRIDGE

CROSS-REFERENCE TO RELATED APPLICATION

This is a CIP application of PCT/JP2014/75614, filed Sep. 26, 2014, which was not published under PCT article 21(2) in English.

BACKGROUND

1. Field

The present disclosure relates to a tape cartridge including a tape roll around which a tape is wound so as to be fed out.

2. Description of the Related Art

Conventionally, a technology of performing print on a tape while transporting the tape including an adhesive layer and a separation material layer is known.

In this prior art, a tape roll (tag tape roll body) around which a tape (tag tape) including the adhesive layer and the separation material layer (separation sheet) is wound is attached to a tape holder storage part of a body housing for use. When the tape roll is attached to the tape holder storage part, the tape is fed out and transported by rotation of the tape roll. When a desired print is formed on the tape being transported, a tape with print is generated and cut off. In use, the separation material layer is peeled off by a user from the cut tape with print. Then, by using an adhesive force of the adhesive layer exposed by peeling-off of the separation material layer, the tape is affixed to an appropriate object to be affixed intended by the user.

As described above, in the case that the separation material layer is peeled off the tape and the tape is used, from a viewpoint of improvement in handling performance by the user, such a measure can be considered that a peeling-off part for peeling off the separation material layer from the tape is disposed and the separation material layer peeled off by the peeling-off part is wound so as to form also the separation material layer into a roll similarly to the tape, and these two rolls (the tape roll and the separation material roll) are integrated by a connecting arm and incorporated as one cartridge, and in order to smoothly perform tape transport, a guide member for guiding the tape in a tape width direction (a guide for regulating movement in the tape width direction) is disposed.

Here, there can be cases that various tapes with width-direction dimensions different from each other are used depending on a preference or application of the user. At this time, if separate cartridges are constructed for each width-direction dimension by preparing a tape roll, a separation material roll, a connecting arm, and a guide member separately for each width-direction dimension corresponding to each of the plurality of types of tape, the numbers of products to be manufactured and manufacturing processes become complicated, which causes steep rise of a manufacturing cost.

SUMMARY

An object of the present disclosure is to provide a tape cartridge which can reduce the manufacturing cost.

In order to achieve the above-described object, according to aspect of the present application, there is provided a tape cartridge comprising a first winding core that includes a first axis and an outer periphery around which a tape having a desired width-direction dimension is wound to form a first tape roll, a second winding core that includes a second axis and an outer periphery around which a part of layers of the tape is to be wound wherein the layers is peeled off from the tape fed out from the first tape roll and transported, a connecting arm that connects the first winding core and the second winding core and that rotatably supports the first winding core on one side in a connecting direction and rotatably supports the second winding core on the other side in the connecting direction, a guide attaching/detaching part that is disposed in the vicinity of a peeling-off part configured to peel-off the part of layers along a transport path of the tape in the connecting arm, and is configured to detachably attach a first guide member configured to allow the tape fed out from the first tape roll to pass in a tape posture so that a linear direction formed by a cross-sectional surface of the tape becomes a first direction in parallel with the first axis and the second axis and to guide the tape by regulating movement in a tape width direction through contact with both end portions of the tape in the tape width direction during the passing, and a second guide member that is disposed on the connecting arm and is configured to guide the tape passes while being guided by the first guide member, by regulating movement in a second direction through contact with one side part of the tape in the second direction orthogonal to a tape surface direction of the tape.

That is, the present disclosure has the first winding core around which the tape is wound, the second winding core around which the part of the layer peeled off the tape is wound, and the connecting arm rotatably supporting those two winding cores. The tape fed out by rotation of the first tape roll including the first winding core has the part of the layer peeled off after being transported, and the peeled-off part of the layer is wound around the second winding core so as to form the second tape roll.

At this time, as described above, the tape fed out from the first tape roll located on one side in a connecting direction is transported to the other side in the connecting direction to the peeling-off part where the peeling-off is performed, and the peeling-off is performed. In the present disclosure, in constitution in which the first winding core and the second winding core are integrated by the connecting arm as described above, in order to smoothly perform the tape transport as described above, a first guide member can be installed on a guide attaching/detaching part disposed in the vicinity of the peeling-off part of the connecting arm. The first guide member guides the tape by allowing the tape to pass so that a linear direction formed by a tape cross-sectional surface becomes a first direction (a direction in parallel with first and second axes of the first and second rolls. A horizontal direction, for example) while regulating movement in the tape width direction through contact with both end portions in the tape width direction.

Moreover, in the present disclosure, the connecting arm includes the second guide member. This second guide member guides the tape by contacting with one side (upper side, for example) portion in the second direction (=direction orthogonal to the first direction; direction orthogonal to the tape surface direction) of the tape passing while being guided by the first guide member as described above, and thereby regulating movement in the second direction.

The guide for regulating movement in the tape width direction by the first guide member and the guide for regulating movement in the direction orthogonal to the tape surface direction by the second guide member as described above allow smooth transport of the tape. Particularly, occurrence of riding over the first guide member on an end portion in the tape width direction or the like that can occur in the case of performing only the guide for regulating the

movement in the tape width direction by using only the first guide member can be reliably prevented by the second guide member and thus, smooth tape transport can be reliably performed.

Moreover, in the present disclosure, the connecting arm including the guide attaching/detaching part and the second guide member is common for the plurality of types of tapes having the width-direction dimensions different from each other. Then, for the common connecting arm, the first tape roll, the second tape roll, and the first guide member are prepared separately for each width-direction dimension and assembled. At this time, in the present disclosure, for the plurality of types of tapes different from each other, the first guide members corresponding to the respective width-direction dimensions are prepared individually. Then, each of the first guide members corresponding to the respective tapes is selected as appropriate and attached to the guide attaching/detaching part disposed on the connected arm so that the guide for regulating the movement of the tape in the tape width direction is performed so as to allow smooth passing.

As a result, in the configuration to achieve smoother transport while allowing use of the plurality of types of tape in accordance with needs of the user, the connecting member (including the guide attaching/detaching part and the second guide member) can be made common for the plurality of types of tape. As a result, as compared with the case in which the first tape roll, the second tape roll, the connecting arm, the first guide member, and the second guide member are all prepared separately for each width-direction dimension, the manufacturing cost can be reduced.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a perspective view illustrating an appearance of a tape printer according to an embodiment of the present disclosure.

FIG. **2** is a side sectional view illustrating an internal structure of the tape printer.

FIG. **3** is a perspective view illustrating the appearance of a state in which a first opening/closing cover, a second opening/closing cover, and a front-side opening/closing cover of the tape printer are open.

FIG. **4** is a perspective view illustrating a state in which the first opening/closing cover, the second opening/closing cover, and the front-side opening/closing cover of the tape printer are opened and a tape cartridge and an ink ribbon cartridge are removed.

FIG. **5** is a perspective view from above illustrating entire constitution of the tape cartridge.

FIG. **6** is a perspective view illustrating the entire constitution of the ink ribbon cartridge.

FIG. **7** is a perspective view from below illustrating the entire constitution of the tape cartridge.

FIG. **8** is a perspective view illustrating the entire constitution of the tape cartridge at tape feeding-out.

FIG. **9** is a perspective view illustrating a state immediately before the first opening/closing cover is closed.

FIG. **10** is a functional block diagram illustrating configuration of a control system of the tape printer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of the present disclosure will be described below by referring to the attached drawings. In the case that notes such as "front", "rear", "left", "right", "upper", and "lower" are indicated in the drawings, the "front", "rear", "left", right", "upper", and "lower" in description in the Specification refer to directions noted.

<Outline Constitution of Tape Printer>

First, outline constitution of a tape printer according to this embodiment will be described by referring to FIGS. **1** to **4**.

<Housing>

In FIGS. **1** to **4**, the tape printer **1** of this embodiment has a housing **2** constituting an outer shell of the apparatus. The housing **2** includes a housing body **2***a*, a rear-side opening/closing part **8**, and a front-side opening/closing cover **9**.

The housing body **2***a* includes a first storage part **3** disposed on the rear side and a second storage part **5** and a third storage part **4** disposed on the front side.

The rear-side opening/closing part **8** is connected capable of being opened/closed with respect to an upper part on the rear side of the housing body **2***a*. This rear-side opening/closing part **8** is capable of opening/closing an upper part of the first storage part **3** by rotating. This rear-side opening/closing part **8** includes a first opening/closing cover **8***a* and a second opening/closing cover **8***b*.

The first opening/closing cover **8***a* is capable of opening/closing the upper part of the first storage part **3** on the front side by rotating around a predetermined rotation axis K**1** disposed on an upper part of the housing body **2***a* on the rear side. In detail, the first opening/closing cover **8***a* is rotatable between a closed position (states in FIGS. **1** and **2**) covering the upper part of the first storage part **3** on the front side and an open position (states in FIGS. **3** and **4**) where the upper part of the first storage part **3** on the front side is exposed.

Inside the first opening/closing cover **8***a*, a head holding body **10** is disposed (see also FIG. **3**). The first opening/closing cover **8***a* is capable of relatively separating/bringing a printing head **11** included in the head holding body **10** away from/closer to a transport roller **12** disposed on the housing body **2***a* by rotating around the above described rotation axis K**1**. In detail, the first opening/closing cover **8***a* is rotatable between the closed position (states in FIGS. **1** and **2**) where the printing head **11** is close to the transport roller **12** and the open position (states in FIGS. **3** and **4**) where the printing head **11** is away from the transport roller **12**.

The second opening/closing cover **8***b* is disposed on the rear side from the first opening/closing cover **8***a* and is capable of opening/closing the upper part of the first storage part **3** on the rear side separately from the opening/closing of the first opening/closing cover **8***a* by rotating around a predetermined rotation axis K**2** disposed on an upper end part of the housing body **2***a* on the rear side. In detail, the second opening/closing cover **8***b* is rotatable between the closed position (states in FIGS. **1** and **2**) covering the upper part of the first storage part **3** on the rear side and the open position (states in FIGS. **3** and **4**) where the upper part of the first storage part **3** on the rear side is exposed.

These first opening/closing cover **8***a* and the second opening/closing cover **8***b* are constituted such that an outer periphery part **18** of the first opening/closing cover **8***a* and an edge part **19** of the second opening/closing cover **8***b* are in contact with each other and cover substantially the whole of the upper part of the first storage part **3** when each of them is in the closed state.

The front-side opening/closing cover **9** is connected to the upper part of the housing body **2***a* on the front side, capable of being opened/closed. This front-side opening/closing cover **9** is capable of opening/closing the upper part of the third storage part **4** by rotating around a predetermined rotation axis K**3** disposed on the upper end part of the

housing body **2***a* on the front side. In detail, the front-side opening/closing cover **9** is rotatable between the closed position (states in FIGS. **1** and **2**) covering the upper part of the third storage part **4** and the open position (states in FIGS. **3** and **4**) exposing the upper part of the third storage part **4**.

<Print-Receiving Tape Roll and its Periphery>

At this time, as illustrated in FIGS. **2** to **4**, at a first predetermined position **13** below the front-side opening/closing cover **9** in the closed state in the housing body **2***a*, a tape cartridge TK is detachably attached (see FIG. **2**). This tape cartridge TK includes a print-receiving tape roll R**1** wound and formed around a winding core **39** including an axis O**1** in a right-and-left direction.

That is, the tape cartridge TK includes, as illustrated in FIG. **5**, the print-receiving tape roll R**1** and a connecting arm **16**. The connecting arm **16** is disposed to connect the winding core **39** and a winding core **29** which will be described later and includes a pair of left and right first bracket parts **20**, **20** disposed on the rear side and a pair of left and right second bracket parts **21**, **21** disposed on the front side.

The winding core **39** is rotatably held between the left and right first bracket parts **20**, **20** by being sandwiched by respective lower ends of the left and right first bracket parts **20**, **20** in the right-and-left direction. In other words, the first bracket parts **20**, **20** sandwich the print-receiving tape roll R**1** (the winding core **39** in detail) from left and right sides along the axis O**1** and hold the print-receiving tape roll R**1** (the winding core **39** in detail) rotatably around the axis O**1** in a state in which the tape cartridge TK is attached to the housing body **2***a* (detailed structure of holding will be described later). These first bracket parts **20**, **20** face with each other in the right-and-left direction. These first bracket parts **20**, **20** are connected on their respective upper end parts to a first connection part **22**, and each of the first bracket parts **20** is extended downward from the first connection part **22**. These first bracket parts **20**, **20** are connected by the first connection part **22** extended substantially along the right-and-let direction while avoiding interference with an outer diameter of the print-receiving tape roll R**1**.

The print-receiving tape roll R**1** is rotatable in the case that the tape cartridge TK is attached inside the housing body **2***a*. The print-receiving tape roll R**1** has a print-receiving tape **150** (a print-receiving layer **154**, a base layer **153**, an adhesive layer **152**, and a separation material layer **151** which will be described later (see an enlarged view in FIG. **2**)) consumed by being fed out wound around the winding core **39** in advance.

In the first storage part **3**, upon attachment of the tape cartridge TK, the print-receiving tape roll R**1** is received from above and stored in a state in which the axis O**1** of winding of the print-receiving tape **150** is laid in the right-and-left direction. As the print-receiving tape roll R**1** feeds out the print-receiving tape **150** by rotation of the winding core **39** in a predetermined rotating direction (A direction in FIG. **2**) in the first storage part **3** in a state stored in the first storage part **3** (in the state in which the tape cartridge TK is attached).

In this embodiment, the case in which the print-receiving tape **150** having adhesiveness is used is exemplified. That is, the print-receiving tape **150** has the print-receiving layer **154**, the base layer **153**, the adhesive layer **152**, and the separation material layer **151** laminated in this order from one side (upper side in FIG. **2**) in a thickness direction to the other side (lower side in FIG. **2**) is formed. The print-receiving layer **154** is a layer in which a desired print part **155** (see a partially enlarged view in FIG. **2**) is formed by heat transfer printing of ink by the printing head **11**. The adhesive layer **152** is a layer for affixing the base layer **153** to an appropriate object to be affixed (not shown). The separation material layer **151** is a layer covering the adhesive layer **152**.

<Transport Roller and Printing Head>

Returning to FIGS. **2** to **4**, the transport roller **12** is disposed on an upper side in the middle of the first storage part **3** and the second storage part **5** in the housing body **2***a*. The transport roller **12** transports the print-receiving tape **150** fed out from the print-receiving tape roll R**1** stored in the first storage part **3** in a tape posture with the tape width direction as the right-and-left direction by being driven by a transport motor M**1** disposed inside the housing body **2***a* through a gear mechanism (not shown). At this time, as illustrated in FIG. **2**, a transport path of the print-receiving tape **150** is bent at the transport roller **12**. That is, the tape having been led to the front substantially along the horizontal direction (to the left in FIG. **2**) has its advancing direction bent diagonally downward at the transport roller **12**. In FIG. **2**, the print-receiving tape **150** transported along the transport path by the transport roller **12** is indicated as appropriate by a solid line or a two-dot chain line in accordance with a tape consumption amount (or a wound amount).

Moreover, the head holding body **10** disposed on the first opening/closing cover **8***a* includes the printing head **11**. The printing head **11** is, as described above, capable of separation away from/bringing closer to the transport roller **12** by rotation of the first opening/closing cover **8***a* around the rotation axis K**1**. That is, in the case that the first opening/closing cover **8***a* is in the closed state, the printing head **11** is brought closer to the transport roller **12**, while in the case that the first opening/closing cover **8***a* is in the open state, the printing head **11** is separated away from the transport roller **12**. This printing head **11** is arranged at a position facing an upper side of the transport roller **12** in the first opening/closing cover **8***a* in the closed state in the head holding body **10** so that the print-receiving tape **150** transported by the transport roller **12** is sandwiched in collaboration with the transport roller **12**. Therefore, in the case that the first opening/closing cover **8***a* is in the closed state, the printing head **11** and the transport roller **12** are arranged facing each other in a vertical direction. The printing head **11** forms desired print on the print-receiving layer **154** of the print-receiving tape **150** in a state sandwiched between the printing head **11** and the transport roller **12** by using an ink ribbon IB of an ink ribbon cartridge RK which will be described later and makes it a tape with print **150'**.

<Ink Ribbon Cartridge>

As illustrated in FIGS. **2** and **3**, at a second predetermined position **14** below the first opening/closing cover **8***a* in the closed state and above the tape cartridge TK in the housing body **2***a*, the ink ribbon cartridge RK is detachably attached. A detailed structure of the ink ribbon cartridge RK is illustrated in FIG. **6**.

As illustrated in FIG. **6**, the ink ribbon cartridge RK includes a cartridge housing **80**, a ribbon feeding-out roll R**4** around which the unused ink ribbon IB is wound capable of being fed out, and a ribbon take-up roll R**5**. The cartridge housing **80** has a feeding-out roll storage part **81** on the rear side, a take-up roll storage part **82** on the front side, and a connection part **83** connecting those both storage parts **81**, **82**. The connection part **83** connects the take-up roll storage part **82** and the feeding-out roll storage part **81** while exposing the ink ribbon IB fed out from the ribbon feeding-out roll R**4** outside the cartridge housing **80**.

The feeding-out roll storage part **81** is formed by combining a substantially semi-cylindrical upper part **81***a* (one-side part) and a lower part **81***b*. The ribbon feeding-out roll R**4** is rotatably supported in the feeding-out roll storage part **81** and feeds out the ink ribbon IB for forming print by the printing head **11** by rotating in the predetermined rotating direction (D direction in FIG. **2**) in a state in which the ink ribbon cartridge RK is attached.

The take-up roll storage part **82** is formed by combining a substantially semi-cylindrical upper part **82***a* and a lower part **82***b*. The ribbon take-up roll R**5** is rotatably supported in the take-up roll storage part **82** and takes up the used ink ribbon IB after print formation by rotating in the predetermined rotating direction (E direction in FIG. **2**) in the state in which the ink ribbon cartridge RK is attached.

That is, in FIG. **2**, the ink ribbon IB fed out from the ribbon feeding-out roll R**4** is arranged on the printing head **11** side of the print-receiving tape **150** in a state sandwiched between the printing head **11** and the transport roller **12** and is brought into contact with a lower part of the printing head **11**. Then, by means of heating from the printing head **11**, the ink of the ink ribbon IB is transferred to the print-receiving layer **154** of the print-receiving tape **150** so as to perform print formation and then, the used ink ribbon IB is taken up by the ribbon take-up roll R**5**.

<Separation Material Roll and its Periphery>

As illustrated in FIG. **5**, the connecting arm **16** of the tape cartridge TK includes a peeling-off part **17** having a substantially horizontal slit shape, for example. The peeling-off part **17** is disposed on a front end on an upper surface of a second connection part **23** and is extended in the right-and-left direction. This peeling-off part **17** is a part for peeling off a part of layers (in detail, the separation material layer **151**) from a tape **150'** with print fed out from the print-receiving tape roll R**1** and transported below a second guide member **28**, which will be described later, to the front side. The tape **150'** with print on which the print has been formed as described above has the part of the layers (in detail, the separation material layer **151**) separated by the peeling-off part **17** as illustrated in FIG. **2** so that the tape is separated into the separation material layer **151** and the tape **150"** with print including the other print-receiving layer **154**, the base layer **153**, and the adhesive layer **152**.

The tape cartridge TK has a separation material roll R**3** formed by winding the peeled-off part of layers (in detail, the separation material layer **151**) around the winding core **29** including an axis O**3** as illustrated in FIGS. **2** and **5**. That is, by attaching the above described tape cartridge TK, the separation material roll R**3** is received in the second storage part **5** from above and stored in a state with the axis O**3** for winding the separation material layer laid in the right-and-left direction. The separation material roll R**3** has the winding core **29** driven through the gear mechanism (not shown) by a separation-sheet take-up motor M**3** disposed on an interior substrate **2***b* of the housing body **2***a* in a state stored in the second storage part **5** (in the state in which the tape cartridge TK is attached), and the winding core **29** takes up the separation material layer **151** by rotating in a predetermined rotating direction (C direction in FIG. **2**) in the second storage part **5**.

At this time, as illustrated in FIG. **5**, the second bracket parts **21**, **21** of the tape cartridge TK sandwich the separation material roll R**3** (in detail, the winding core **29**) from the both right and left sides along the axis O**3** and hold the separation material roll R**3** (in detail, the winding core **29**) rotatably around the axis O**3** in the state in which the tape cartridge TK is attached to the housing body **2***a*. That is, the winding core **29** is sandwiched between the left and right second bracket parts **21**, **21** on the respective lower ends of the left and right second bracket parts **21**, **21** in the right-and-left direction and held rotatably. At this time, these second bracket parts **21**, **21** face with each other in the right-and-left direction. The respective upper ends of the second bracket parts **21**, **21** are connected to the second connection part **23** extended substantially along the right-and-left direction, that is, these second bracket parts **21**, **21** are connected by the second connection part **23** on the upper end parts, and each of the second bracket parts **21** is extended downward from the second connection part **23**. The first bracket parts **20**, **20** on the rear side and the first connection part **22** as well as the second bracket parts **21**, **21** on the front side and the second connection part **23** are connected by a pair of left and right roll connecting beam parts **24**, **24**. In other words, the right-side roll connecting beam part **24** has its rear end connected to the first bracket part **20** on the rear side and on the right side and has its front end connected to the second bracket part **21** on the front side and on the right side. Similarly, the left-side roll connecting beam part **24** has its rear end connected to the first bracket part **20** on the rear side and on the left side and has its front end connected to the second bracket part **21** on the front side and on the left side.

As illustrated in FIG. **7** and above described FIGS. **5** and **8**, on lower ends substantially in the middle of each of the pair of left and right roll connecting beam parts **24**, **24**, a pair of left and right roller storage parts **25**, **25** each of which is a groove having a substantially semicircular shape are disposed. These roller storage parts **25**, **25** store an upper half of the transport roller **12** in the state in which the tape cartridge TK is attached to the housing body **2***a*. At this time, by means of the second connection part **23**, the first connection part **22**, and the left and right roll connecting beam parts **24**, **24**, an opening OP is defined. The left and right roller storage parts **25**, **25** are disposed on the opening OP, in which the left-side roller storage part **25** is penetrated through from an inner surface to an outer surface of the left-side roll connecting beam part **24** on the left side, while the right-side roller storage part **25** is penetrated through from an inner surface to an outer surface of the right-side roll connecting beam part **24** on the right side.

In FIG. **5**, a state before the separation material layer **151** is wound around the winding core **29** including the axis O**3** to form the separation material roll R**3** (in the case of the unused tape cartridge TK) is illustrated. That is, the roll flange parts f**3**, f**4** each having a substantially circular shape and disposed so as to sandwich the both sides of the separation material layer **151** in the width direction are illustrated, and reference character "R**3**" is given for convenience to a spot where the separation material roll R**3** is formed.

<Tape Roll with Print and its Periphery>

On the other hand, as illustrated in FIGS. **2** and **4**, in the third storage part **4**, a take-up mechanism **40** for sequentially winding the tape **150"** with print is received from above. The take-up mechanism **40** is stored so that a winding core **41** is rotatably supported around an axis O**2** in a state in which the axis O**2** of winding of the tape **150"** with print is in the right-and-left direction. In the state stored in the third storage part **4**, the take-up mechanism **40** is driven by the adhesive take-up motor M**2** disposed in the housing body **2***a* through the gear mechanism, not shown, and the winding core **41** rotates in a predetermined rotating direction (B direction in FIG. **2**) in the third storage part **4** so that the tape **150"** with print is taken up and laminated. As a result, the

tape **150"** with print is sequentially wound on an outer periphery side of the winding core **41** of the take-up mechanism **40** to form a tape roll R**2** with print.

<Cutter Mechanism **30**>

As illustrated in FIG. **2**, a cutter mechanism **30** is disposed on a downstream side of the printing head **11** along a tape transport direction and on an upstream side of the tape roll R**2** with print.

The cutter mechanism **30** has a movable blade and a running body capable of running in the tape width direction (in other words, in the right-and-left direction) while supporting the movable blade, though not shown in detail. Running of the running body driven by a cutter motor (not shown) and moving of the movable blade in the tape width direction cut the tape **150"** with print in the width direction. The cutter mechanism **30** is located on the downstream side from the printing head **11** along the transport path and on the upstream side from the take-up mechanism **40** including the winding core **41**.

<Outline of Operation of Tape Printer>

Next, an outline of an operation of the tape printer **1** with the above described constitution will be described.

That is, in the case that the tape cartridge TK is attached at the first predetermined position **13**, the print-receiving tape roll R**1** is stored in the first storage part **3** located on the rear side of the housing body **2***a*, and the axis O**3** side forming the separation material roll R**3** is stored in the second storage part **5** located on the front side of the housing body **2***a*. In the third storage part **4** located on the front side of the housing body **2***a*, the take-up mechanism **40** for forming the tape roll R**2** with print is stored.

At this time, in the case that the transport roller **12** is driven, the print-receiving tape **150** fed out by rotation of the print-receiving tape roll R**1** stored in the first storage part **3** is transported to the front side. Then, the desired print is formed on the print-receiving layer **154** of the print-receiving tape **150** being transported by the printing head **11** to form the tape **150'** with print. The tape **150'** with print on which the print has been formed is further transported to the front side and when it is transported to the peeling-off part **17**, the separation material layer **151** is peeled off in the peeling-off part **17**, and the adhesive tape **150"** with print is formed. The peeled-off separation material layer **151** is transported to the lower side and led into the second storage part **5** and wound in the second storage part **5** so as to form the separation material roll R**3**.

On the other hand, the adhesive tape **150"** with print in which the separation material layer **151** has been peeled off is further transported to the front side and led into the third storage part **4** and wound on the outer periphery side of the take-up mechanism **40** in the third storage part **4** so as to form the tape roll R**2** with print. At that time, the cutter mechanism **30** disposed on the downstream side (that is, the front side) in the transport direction cuts the adhesive tape **150"** with print. As a result, the adhesive tape **150"** with print being wound around the tape roll R**2** with print can be cut at timing desired by the user, and the tape roll R**2** with print can be taken out of the third storage part **4** after the cutting.

At this time, though illustrated description will be omitted, a non-adhesive tape (tape without the adhesive layer **152** and the separation material layer **151**) may be wound around the print-receiving tape roll R**1**. In this case, too, in the first storage part **3**, the print-receiving tape roll R**1** around which the non-adhesive tape is wound is received from above upon attachment of the tape cartridge TK and is stored in the state with the axis O**1** of winding of the non-adhesive tape laid in the right-and-left direction. Then, the print-receiving tape roll R**1** feeds out the non-adhesive tape by rotating in the predetermined rotating direction (the A direction in FIG. **2**) in the first storage part **3** in the state stored in the first storage part **3** (in the state in which the tape cartridge TK is attached).

Moreover, at this time, a chute **15** (see FIG. **2**) for switching the transport path of the non-adhesive tape (or it may be the print-receiving tape **150**) between a side toward the tape roll R**2** with print and a side toward a discharging exit (not shown) may be arranged. That is, by switching the tape path through a switching operation of the chute **15** by a switching lever (not shown), the non-adhesive tape (or the tape **150"** with print) after print formation may be discharged to an outside of the housing **2** as it is through the discharging exit (not shown) disposed on the second opening/closing cover **8***b* side of the housing **2**, for example, without winding it in the third storage part **4** as will be described later.

<Guide Mechanism in Tape Width Direction and Tape Vertical Direction>

One of features of this embodiment is a guide member disposed for smoother transport of the print-receiving tape **150** in the tape cartridge TK. The details will be sequentially described below.

<First Guide Member>

As described above, in this embodiment, in the configuration in which the print-receiving tape roll R**1** and the separation material roll R**3** are integrated by the connecting arm **16** as described above, in order to perform smooth tape transport as described above, in the connecting arm **16**, in the vicinity of the peeling-off part **17** along the tape transport path and also between the roll connecting beam parts **24**, **24**, a recess part **26** opened upward is formed as illustrated in FIGS. **5** and **8**.

In the recess part **26**, a first guide member **27** is detachably attached. The first guide member **27** includes guide projections **27***a*, **27***b* protruding upward on both right and left sides on the rear side and guide projections **27***c*, **27***d* protruding upward on both right and left sides on the front side. By means of these guide projections **27***a*-**27***d*, in the state attached to the recess part **26**, the first guide member **27** allows the print tape **150'** with print (see FIG. **8**) corresponding to the print-receiving tape **150** fed out from the print-receiving tape roll R**1** to pass in a tape posture so that a direction of a straight line formed by the tape cross sectional surface is in the right-and-left direction (horizontal direction) and also guides it by regulating movement in the tape width direction during the passing (see FIG. **8**). As a result, smooth tape transport can be reliably performed.

As illustrated in FIGS. **5** and **8**, the first guide member **27** includes a pair of left and right substrate parts **27***e*, **27***e* fixed to inner sides of the roll connecting beam parts **24**, **24**. On a front end part and a rear end part between the substrate parts **27***e*, **27***e*, protruding parts **27***f*, **27***f* protruding downward from the substrate parts **27***e*, **27***e* and fitted with the recess part **26** are disposed. At this time, on the front end part between the substrate parts **27***e*, **27***e*, the guide projections **27***c*, **27***d* protrude upward. On the rear end part between the substrate parts **27***e*, **27***e*, the guide projections **27***a*, **27***b* protrude upward. The guide projection **27***a* and the guide projection **27***b* as well as the guide projection **27***c* and the guide projection **27***d* are arranged separately from each other by a separation distance substantially equal to the tape width-direction dimension (desired width-direction dimension) of the tape **150'** with print being transported and are brought into contact with the both end parts in the tape width direction of the tape **150'** with print.

That is, one first guide member **27** corresponding to the type (tape width-direction dimension) of the print-receiving tape **150** is attached so that the protruding parts **27***f*, **27***f* are fitted from above in the recess part **26** between the roll connecting beam parts **24**, **24** of the connecting arm **16**. As a result, the tape **150'** with print being transported passes in the tape posture with the tape width direction laid in the right-and-left direction between the guide projections **27***a*, **27***b* as well as the guide projections **27***c*, **27***d* of the first guide member **27** in the state held in the recess part **26**. At this time, the both end parts of the tape **150'** with print in the tape width direction are brought into contact with the inner sides of the guide projections **27***a*, **27***b* as well as the inner sides of the guide projections **27***c*, **27***d*, and the guide for regulating movement in the tape width direction is performed, respectively. As a result, the tape **150'** with print can be passed smoothly.

<Second Guide Member>

In this embodiment, in addition to the first guide member **27**, a tongue-shaped second guide member **28** is disposed. The second guide member **28** is disposed between the left and right roll connecting beam parts **24**, **24** so as to protrude from the first connection part **22** toward the second connection part **23**. The second guide member **28** is brought into contact with an upper side part of the tape **150'** with print passing while being guided in the tape width direction by the first guide member **27** as described above, whereby guiding is performed while regulating movement in the vertical direction (in other words, the direction orthogonal to the tape surface direction). At this time, the second guide member **28** is not in contact with the both end parts in the width direction of the tape **150'** with print as illustrated in FIG. **8** but is arranged so as to be in contact with a center part of the tape **150'** with print in the width direction.

The second guide member **28** is formed integrally with the first connection part **22**. The second guide member **28** is disposed so as to protrude from the rear side to the front side of the pair of left and right roll connecting beams **24**, **24** (in other words, from the adhesive tape roll R**1** side to the separation material tape roll R**3** side).

<Positioning of Head Holding Body>

Another feature of this embodiment is that the head holding body **10** is disposed movably in the right-and-left direction (in other words, in the tape width direction), and positioning of the head holding body **10** in the right-and-left direction is performed on the tape cartridge TK side. Its contents will be described in order below.

<Occurrence of Bias of Print or the Like>

In the case that the head holding body **10** is disposed on the first opening/closing cover **8***a* as in the tape printer **1** of this embodiment, relative positions of a reference position (a center in the width direction, for example) of the print-receiving tape **150** in the tape width direction fed out on the apparatus housing **2***a* side and a print formation reference position (a center position within a print formation range, for example) by the head holding body **10** are likely to be shifted in the tape width direction from an originally set position relation due to rattling or the like of each part in the apparatus caused by an opening/closing operation of the first opening/closing cover **8***a*. In such a case, there is a concern that a print quality deteriorates such that the print formed on the print-receiving tape **150** is biased to one side in the tape width direction, for example.

<Contacted Part and Positioning Contact Part>

Thus, in this embodiment, the head holding body **10** (see FIG. **3**) inside the first opening/closing cover **8***a* is movably supported by an appropriate support structure, not shown, in the right-and-left direction with respect to the first opening/closing cover **8***a*. Moreover, a pair of left and right contacted parts **10***a*, **10***a* each having a downwardly projecting piece shape are disposed on the both left and right sides of the head holding body **10**.

On the other hand, in corresponding with the above, on respective upper end edges of the pair of left and right roll connecting beams **24**, **24** of the connecting arm **16**, left and right positioning contact parts **129**, **129** are extended downward having an inverted tapered shape with respect to each other in the vicinity of each of the roller storage parts **25**, **25**. In detail, the right-side positioning contact part **129** is located above the right-side roller storage part **25**, while the left-side positioning contact part **129** is located above the left-side roller storage part **25**. At this time, the positioning contact parts **129**, **129** are extended with inclination toward the downward inner side from the upper end edge of the roll connecting beam **24** and each of lower end sides of those positioning contact parts **129**, **129** is a vertical surface. That is, the right-side positioning contact part **129** includes a right inclined surface extending so as to get closer to the left-side roll connecting beam **24** from the upper end edge of the right-side roll connecting beam **24** on the upper end and also includes a right-side vertical surface on a lower end. Similarly, the left-side positioning contact part **129** includes a left inclined surface extending so as to get closer to the right-side roll connecting beam **24** from the upper end edge of the left-side roll connecting beam **24** on the upper end and also includes a left-side vertical surface on the lower end. An interval between the right-side vertical surface and the left-side vertical surface is constant. In the closed state of the first opening/closing cover **8***a*, as illustrated in FIG. **9**, the right-side positioning contact part **129** is brought into contact with the right-side contacted part **10***a* of the head holding body **10**, while the left-side positioning contact part **129** is brought into contact with the left-side contacted part **10***a* of the head holding body **10**. As a result, the positioning contact parts **129**, **129** can position the head holding body **10** in the tape width direction.

<Control System>

Next, by using FIG. **10**, a control system of the tape printer **1** will be described. In FIG. **10**, the tape printer **1** includes a CPU **212** constituting a calculation part performing predetermined calculation. The CPU **212** is connected to a RAM **213** and a ROM **214**. The CPU **212** executes signal processing in accordance with a program stored in advance in the ROM **214** while using a temporary storage function of the RAM **213**, whereby the entire tape printer **1** is controlled.

The CPU **212** is connected to a motor driving circuit **218** performing drive control of the transport motor M**1** for driving the transport roller **12**, a motor driving circuit **219** performing drive control of the adhesive take-up motor M**2** for driving the tape roll R**2** with print, a motor driving circuit **220** performing drive control of the separation sheet take-up motor M**3** for driving the separation material roll R**3**, a printing head control circuit **221** performing conduction control of a heat generating element of the printing head **11**, a display part **215** performing appropriate display, and an operation part **216** capable of input of an operation by the user as appropriate.

In the ROM **214**, a control program for executing predetermined control processing is stored. In the RAM **213**, an image buffer **213***a* is disposed for developing printing data in an image data format received from a PC, not shown, for example, to dot pattern data to be printed on a predetermined print area of the print-receiving layer **154** and storing it. The CPU **212** performs printing corresponding to the printing

data by the printing head **11** through the printing head control circuit **221** in accordance with the printing data stored in the image buffer **213***a* while feeding out the print-receiving tape **150** by the transport roller **12** by an appropriate control program stored in the ROM **214**.

<Effect by this Embodiment>

As described above, in this embodiment, in the tape cartridge TK, the first guide member **27** and the second guide member **28** are disposed. As a result, as described above, smooth transport of the tape can be realized by the guide for regulating movement in the tape width direction by the first guide member **27** and the guide for regulating movement in the direction orthogonal to the tape surface direction by the second guide member **28**. Particularly, occurrence of riding over the first guide member **27** on the end part of the tape in the width direction or the like that can occur in the case that only the guide for regulating movement in the tape width direction is performed by using only the first guide member **27** can be reliably prevented by the second guide member **28**, and smooth tape transport can be reliably performed.

On the other hand, there can be the case that various print-receiving tapes **150** having width-direction dimensions different from each other are used depending on a preference or application of the user. If the separate tape cartridges TK are constructed for each width-direction dimension by preparing the print-receiving tape roll R**1**, the separation material roll R**3**, the connecting arm **16**, the first guide member **27**, and the second guide member **28** separately for each width-direction dimension corresponding to each of the plurality of types of the print-receiving tape **150**, the numbers of products to be manufactured and manufacturing processes become complicated, which causes steep rise in a manufacturing cost.

Thus, in this embodiment, the connecting arm **16** including the recess part **26** and the second guide member **28** is made common for the plurality of types of the print-receiving tape **150** with the width-direction dimensions different from each other. Then, it is so constituted that, with respect to the common connecting arm **16** and the recess part **26**, the print-receiving tape roll R**1**, the separation material tape roll R**3**, and the first guide member **27** are prepared separately for each tape width-direction dimension and assembled. At this time, in this embodiment, with respect to the plurality of types of print-receiving tape **150** different from each other, the first guide member **27** corresponding to each of the tape width-direction dimensions is prepared separately and is made usable. Then, each of the first guide members **27** corresponding to the respective print-receiving tapes **150** is selected as appropriate and is attached to the recess part **26** disposed on the connecting arm **16** so that the guide for regulating movement of the tape **150'** with print in the tape width direction is performed. As a result, the tape **150'** with print can be passed smoothly.

As a result, in the configuration to achieve smoother transport of the tape while allowing usage of the plurality of types of the print-receiving tape **150** according to the user's needs, the connecting arm **16** (including the recess part **26** and the second guide member **28**) can be made common for the plurality of types of the print-receiving tape **150**. As a result, the manufacturing cost can be reduced as compared with the case that all of the print-receiving tape roll R**1**, the separation material tape roll R**3**, the connecting arm **16**, the first guide member **27**, and the second guide member **28** are prepared separately for each width-direction dimension.

Moreover, in this embodiment, particularly the second guide member **28** is disposed so as to protrude from the rear side to the front side in the recess part **26**. As a result, by attaching the first guide member **27** corresponding to each type of the print-receiving tape **150** to the recess part **26** between the left and right roll connecting beams **24**, **24** from above, the both end parts of the print-receiving tape **150** in the tape width direction can be reliably guided and the surface on the upper side of the print-receiving tape **150** can be reliably guided by the second guide member **28** (see FIG. **8**).

Moreover, in this embodiment, particularly the second guide member **28** is integrally formed with the first connection part **22** of the connecting arm **16**. As a result, to the plurality of types of the print-receiving tape **150** with width-direction dimensions different from each other, one second guide member **28** can be reliably disposed in common.

Moreover, in this embodiment, the head holding body **10** is disposed movably in the tape width direction with respect to the first opening/closing cover **8***a*, and the positioning contact part **129** for positioning the movable head holding body **10** is disposed on the tape cartridge TK side. On the head holding body **10**, the contacted part **10***a* corresponding to that is disposed. In the case that the first opening/closing cover **8***a* is in the open state, the positioning contact part **129** is separated away from the contacted part **20***b* of the head holding body **10**, while in the case that the first opening/closing cover **8***a* is in the closed state, it is brought into contact with the contacted part **10***a*. As a result, the head holding body **10** movable in the tape width direction is positioned in the tape width direction. As a result, occurrence of the above described bias in the print formed on the tapes **150'**, **150"** with print or the like can be prevented, and a print quality can be improved without complicated print control or the like.

Moreover in this embodiment, particularly by the two positioning contact parts **129**, **129** disposed on the respective both sides in the tape width direction, positioning of the head holding body **10** from the left side and positioning of the head holding body **10** from the right side can be both performed. As a result, occurrence of bias of the print can be reliably prevented, and the print quality can be reliably improved.

Moreover in this embodiment, particularly the two positioning contact parts **129**, **129** are disposed in the vicinity of the roller storage part **25** storing the transport roller **12**. The printing head **11** performs print formation in the state sandwiching the print-receiving tape **150** with the printing head **11** and the transport roller **12** and thus, the two positioning contact parts **129**, **129** perform the above described positioning in the vicinity of positions where the print is formed. As a result, the print quality can be improved further reliably.

In the above, the case that the present disclosure is applied to the tape printer **1** performing print on the print-receiving tape **150** is described as an example, but that is not limiting, it can be also applied to a tape printer performing processing other than print on the tape.

In the above, arrows illustrated in FIG. **10** indicate an example of flows of signals and are not intended to limit the flow direction of the signals.

Moreover, other than the above, methods by the embodiment or each variation may be combined as appropriate in use.

What is claimed is:

1. A tape cartridge comprising:

a first winding core that includes a first axis and an outer periphery around which a tape having a desired width-direction dimension is wound to form a first tape roll;

a second winding core that includes a second axis and an outer periphery around which a part of layers of said tape is to be wound, wherein the layers are peeled off from said tape fed out from said first tape roll and transported;

a connecting arm that connects said first winding core and said second winding core and that rotatably supports said first winding core on one side in a connecting direction and rotatably supports said second winding core on the other side in the connecting direction;

a guide attaching/detaching part that is disposed in the vicinity of a peeling-off part configured to peel-off said part of layers along a transport path of said tape in said connecting arm, and is configured to detachably attach a first guide member configured to allow said tape fed out from said first tape roll to pass in a tape posture so that a linear direction formed by a cross-sectional surface of the tape becomes a first direction in parallel with said first axis and said second axis and to guide said tape by regulating movement in a tape width direction through contact with both end portions of said tape in the tape width direction during the passing; and

a second guide member that is disposed on said connecting arm and is configured to guide said passing of the tape while being guided by said first guide member, by regulating movement in a second direction through contact with one side part of said tape in the second direction orthogonal to a tape surface direction of said tape.

2. The tape cartridge according to claim 1, wherein

said connecting arm includes:

a pair of first bracket parts that is disposed on one side in said connecting direction and rotatably holds said first winding core by the first winding core being sandwiched by said first bracket parts from one side and an other side along said first axis;

a first connection part that extends and connects upper end parts of said pair of first bracket parts;

a pair of second bracket parts that is disposed on the other side in said connecting direction and that rotatably holds said second winding core by the second winding core being sandwiched by said second bracket parts from one side and the other side along said second axis;

a second connection part that extends and connects upper end parts of said pair of second bracket parts; and

a pair of left and right roll connecting beam parts that is arranged by connecting said first bracket part and said first connection part as well as said second bracket part and said second connection part.

3. The tape cartridge according to claim 2, wherein

said guide attaching/detaching part is a recess part formed between said pair of left and right roll connecting beams and is opened on said one side in said second direction; and

said second guide member protrudes from one side to the other side in said connecting direction in said recess part.

4. The tape cartridge according to claim 2, wherein

said second guide member is configured integrally with said first connection part of said connecting arm.

5. The tape cartridge according to claim 1, wherein

said second guide member is configured to guide said tape in contact with a center part of the tape in a width direction.

6. The tape cartridge according to claim 5, wherein

said second guide member is arranged by not being in contact with both end parts of said tape in the width direction.

7. The tape cartridge according to claim 1, further comprising said first guide member attached to said guide attaching/detaching part.

8. The tape cartridge according to claim 7, wherein

said first guide member includes:

first guide projections that protrude to one side respectively in said second direction on both sides in said first direction on one side in said connecting direction; and

second guide projections that protrude to one side respectively in said second direction on both sides in said first direction on an other side in said connecting direction.

9. The tape cartridge according to claim 8, wherein

each of said first guide projections and said second guide projections are configured to be in contact with both end parts of said tape in the width direction.

10. A tape cartridge comprising:

a first winding core that includes an outer periphery around which a tape is wound to form a first tape roll;

a second winding core; and

a connecting arm,

said connecting arm comprising:

a rear-right bracket;

a rear-left bracket;

a rear bracket connection part;

a front-right bracket;

a front-left bracket;

a front bracket connection part;

a slit;

a right beam; and

a left beam,

an upper end of said rear-right bracket and an upper end of said rear-left bracket being connected to said rear bracket connection part;

said rear-right bracket extending towards a downward direction from said rear bracket connection part;

said rear-left bracket extending towards said downward direction from said rear bracket connection part;

said rear-right bracket and said rear-left bracket facing each other in a right-left direction;

an upper end of said front-right bracket and an upper end of said front-left bracket being connected to said front bracket connection part;

said front-right bracket extending towards said downward direction from said front bracket connection part;

said front-left bracket extending towards said downward direction from said front bracket connection part;

said front-right bracket and said front-left bracket facing each other in said right-left direction;

said slit being disposed on a front end on an upper surface of said front bracket connection part and extending in said right-left direction;

a rear end of said right beam being connected to said rear-right bracket;

a front end of said right beam being connected to said front-right bracket;

a rear end of said left beam being connected to said rear-left bracket;

a front end of said left beam being connected to said front-left bracket;

said first winding core being rotatably held by being sandwiched in said right-left direction by a lower end of said rear-right bracket and a lower end of said rear-left bracket between said rear-right bracket and said rear-left bracket;

said second winding core being rotatably held by being sandwiched in said right-left direction by a lower end of said front-right bracket and a lower end of said front-left bracket between said front-right bracket and said front-left bracket;

said slit being configured to peel off a part of layers from said tape fed out from said tape roll and transported;

said second winding core being configured to wind the part of layers;

said right beam comprising a right semicircular groove disposed on a lower end of the right beam;

said left beam comprising a left semicircular groove disposed on a lower end of the left beam;

said right semicircular groove and said left semicircular groove being disposed in an opening;

said opening being defined by said front bracket connection part, said rear bracket connection part, said right beam, and said left beam; and

said right semicircular groove being penetrated through said right beam in said right-left direction, and

said left semicircular groove being penetrated through said left beam in said right-left direction.

11. The tape cartridge according to claim **10**, wherein

said right beam includes a right positioning part disposed on an upper end edge of the right beam; and

said left beam includes a left positioning part disposed on an upper end edge of the left beam.

12. The tape cartridge according to claim **11**, wherein

said right positioning part is located above said right semicircular groove; and

said left positioning part is located above said left semicircular groove.

13. The tape cartridge according to claim **11**, wherein

said right positioning part includes an upper end with a right inclined surface extending from said upper end edge of said right beam and getting closer to said left beam and includes a lower end with a right vertical surface;

said left positioning part includes an upper end with a left inclined surface extending from said upper end edge of said left beam and getting closer to said right beam and includes a lower end with a left vertical surface; and

an interval between said right vertical surface and said left vertical surface is constant.

14. A tape cartridge comprising:

a first winding core that includes an outer periphery around which a tape is wound to form a tape roll;

a second winding core; and

a connecting arm,

said connecting arm comprising:

a rear-right bracket;

a rear-left bracket;

a rear bracket connection part;

a front-right bracket;

a front-left bracket;

a front bracket connection part;

a slit;

a right beam; and

a left beam,

an upper end of said rear-right bracket and an upper end of said rear-left bracket being connected to said rear bracket connection part;

said rear-right bracket extending towards a downward direction from said rear bracket connection part;

said rear-left bracket extending towards said downward direction from said rear bracket connection part;

said rear-right bracket and said rear-left bracket facing each other in a right-left direction;

an upper end of said front-right bracket and an upper end of said front-left bracket being connected to said front bracket connection part;

said front-right bracket extending towards said downward direction from said front bracket connection part;

said front-left bracket extending towards said downward direction from said front bracket connection part;

said front-right bracket and said front-left bracket facing each other in said right-left direction;

said slit being disposed on a front end on an upper surface of said front bracket connection part and extending in said right-left direction;

a rear end of said right beam being connected to said rear-right bracket;

a front end of said right beam being connected to said front-right bracket;

a rear end of said left beam being connected to said rear-left bracket;

a front end of said left beam being connected to said front-left bracket;

said first winding core being rotatably held by being sandwiched in said right-left direction by a lower end of said rear-right bracket and a lower end of said rear-left bracket between said rear-right bracket and said rear-left bracket;

said second winding core being rotatably held by being sandwiched in said right-left direction by a lower end of said front-right bracket and a lower end of said front-left bracket between said front-right bracket and said front-left bracket;

said rear bracket connection part comprising a tongue located between said right beam and said left beam;

said tongue protruding from said rear bracket connection part towards said front bracket connection part;

said slit being configured to peel off a part of layers from said tape fed out from said tape roll and transported under said tongue; and

said second winding core being configured to wind the part of layers.

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